

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF TENNESSEE
Nashville Division**

L.W., by and through her parents and next friends, Samantha Williams and Brian Williams, *et al.*,

Plaintiffs,

and

UNITED STATES OF AMERICA,

Plaintiff-Intervenor,

v.

JONATHAN SKRMETTI, in his official capacity as the Tennessee Attorney General and Reporter, *et al.*,

Defendants.

Civil No. 3:23-cv-00376

Judge Richardson

Judge Newbern

EXPERT REBUTTAL DECLARATION OF JACK TURBAN, MD, MHS

1. I have been retained by counsel for Plaintiffs as an expert in connection with the above-captioned litigation.
2. I have actual knowledge of the matters stated herein.
3. My background and credentials are outlined in my initial declaration.
4. I reviewed the declarations of Drs. Cantor, Hruz, Levine, Roman, Laidlaw, and Nangia. Here, I respond to some of the central points in those declarations. I do not specifically address each study or article cited, but instead explain the overall problems with some of the conclusions that Defendants' experts draw and provide data showing why such conclusions are in error. I reserve the right to supplement my opinions if necessary as the case proceeds.

DEFENDANTS' EXPERTS' CLAIM THAT TENNESSEE'S BAN ON GENDER-AFFIRMING MEDICAL CARE FOR ADOLESCENT GENDER DYSPHORIA IS "IN LINE WITH INTERNATIONAL CONSENSUS" IS NOT ACCURATE

5. Defendants' experts rely on reports from a handful of European countries and imply that Tennessee's ban on gender-affirming medical care is in line with "international consensus." This is not accurate. Of note, the vast majority of these reports were not peer-reviewed. Some of these reports are older and do not include the most recent research demonstrating the efficacy of the banned treatments. And others do not include all of the relevant literature. Most importantly, though, Defendants' experts fail to emphasize that none of these countries have banned gender-affirming medical care for adolescents with gender dysphoria as Tennessee does. Rather, the select countries referenced have changed the way in which gender-affirming care is being delivered (e.g., moving care to settings where more data can be collected, as in Sweden, or creating several regional clinics instead of one centralized clinic, as in the United Kingdom). Rather than put it in line with "international consensus," Tennessee's broad ban on gender-affirming medical care for adolescent gender dysphoria puts the law squarely outside of mainstream medical views and policies around the world. In the United States, the major relevant expert medical organizations (e.g., the American Medical Association, the American Academy of Pediatrics, the American Psychiatric Association, and the American Academy of Child & Adolescent Psychiatry) explicitly oppose such bans.¹

¹ For a list of statements from major medical organizations opposing legislative bans on gender-affirming medical care for adolescent gender dysphoria, please see Turban, J. L., Kraschel, K. L., & Cohen, I. G. (2021). Legislation to criminalize gender-affirming medical care for transgender youth. *JAMA*, 325(22), 2251-52.

THOUGH RANDOMIZED CONTROLLED TRIALS OFTEN REPRESENT HIGHER QUALITY EVIDENCE THAN OTHER STUDY DESIGNS, THEY ARE NOT ETHICAL IN THE REALM OF GENDER-AFFIRMING CARE FOR ADOLESCENT GENDER DYSPHORIA AND EXISTING RESEARCH PROVIDES VALUABLE INFORMATION ON QUESTIONS OF CORRELATION VERSUS CAUSATION

6. Defendants' experts spend a great deal of time focusing on randomized controlled trial study designs and questions of correlation versus causation. It is true that randomized controlled trials provide valuable information that other studies do not; however, as noted in my initial declaration, they are not considered ethical in this area and would not be approved by an Institutional Review Board. For this reason, experts in this field look at the body of a literature as a whole to address certain questions.

7. As Dr. Cantor notes in his declaration, there are three possibilities when a study finds a correlation between two variables X and Y: "that X causes Y [causation], that Y causes X [reverse causation], or that there is some other variable Z, that causes both X and Y [confounding effect]." (Cantor Decl. ¶ 59). In this case, the question is whether gender-affirming medical care (X) causes improved mental health outcomes for adolescents with gender dysphoria (Y).

8. The question of "reverse causation" (*i.e.*, the notion that improved mental health causes one to access gender-affirming medical care rather than the reverse, that gender-affirming medical care leads to better mental health) has been examined in the literature. For example, in a recent major publication in *The New England Journal of Medicine*, Chen et al. used a technique called parallel process modeling and found that improvements in mental health tracked along with improvements in appearance congruence over time (a measure of the degree to which study participants' bodies aligned with their gender identities), suggesting that gender-affirming medical

care was the cause of the improvements in mental health, and arguing against the notion of reverse causation.²

9. The question of “confounding effect” has also been examined in several ways. For instance, a 2022 paper from my research group assessing the relationship between treatment with gender-affirming medical interventions and improved mental health adjusted for a range of potentially confounding variables including age, gender identity, sex assigned at birth, sexual orientation, race/ethnicity, level of family support for gender identity, relationship status, level of education, employment status, household income, having ever received pubertal suppression, having ever been exposed to gender identity conversion efforts, and having experienced any harassment based on gender identity in school.³ Even after adjusting for these potential confounding factors, the study found that treatment with gender-affirming medical care during adolescence was associated with lower odds of adverse mental health outcomes.

10. Another potential confounder that Defendants’ experts raise is whether or not participants received supportive psychotherapy in addition to gender-affirming medical care. Of note, there is no evidence-based psychotherapy that treats gender dysphoria itself, so such therapy is generally aimed at supporting the patient in general with their mental health. At least two studies provide evidence against the notion that mental health improvements were due to supportive psychotherapy rather than gender-affirming hormone treatment. Achielle et al. ran regression analyses in order to separate out the impacts of gender-affirming medical interventions from the

² Chen, D., Berona, J., Chan, Y. M., Ehrensaft, D., Garofalo, R., Hidalgo, M. A., ... & Olson-Kennedy, J. (2023). Psychosocial Functioning in Transgender Youth after 2 Years of Hormones. *New England Journal of Medicine*, 388(3), 240-50.

³ Turban, J. L., King, D., Kobe, J., Reisner, S. L., & Keuroghlian, A. S. (2022). Access to gender-affirming hormones during adolescence and mental health outcomes among transgender adults. *PLoS One*, 17(1), e0261039.

impact of counseling and psychiatric medications.⁴ Though the sample size made it difficult to detect differences, they nonetheless found that pubertal suppression was associated with better scores on the Center for Epidemiology Studies Depression Scale, which was a statistically significant finding.⁵ Costa et al. examined two cohorts of adolescents with gender dysphoria. Both cohorts received six months of supportive psychotherapy for the initial six months of the study. For the next six months, one group continued to receive supportive psychotherapy alone, while the other received supportive psychotherapy *and* pubertal suppression. The group that received pubertal suppression in addition to psychotherapy experienced statistically significant improvement in global functioning over that second course of six months, while the group that received supportive psychotherapy alone did not.⁶

**DEFENDANTS' EXPERTS' DISCUSSION OF CHILDHOOD VERSUS
ADOLESCENT ONSET OF GENDER DYSPHORIA DOES NOT SUPPORT BANNING
GENDER-AFFIRMING MEDICAL CARE**

11. Defendants' experts draw a distinction between those who first come to experience gender dysphoria in early childhood and those who first come to experience gender dysphoria in adolescence (i.e., after the onset of puberty). They imply that those who first recognize gender dysphoria in adolescence will not continue to hold a gender identity different from their sex

⁴ Achille, C., Taggart, T., Eaton, N. R., Osipoff, J., Tafuri, K., Lane, A., & Wilson, T. A. (2020). Longitudinal impact of gender-affirming endocrine intervention on the mental health and well-being of transgender youths: preliminary results. *International Journal of Pediatric Endocrinology*, 2020(1), 1-5.

⁵ It is important to note that in statistics, a statistically significant finding tells you that a finding is likely to represent a true effect and the finding wasn't due to random chance. In contrast, the lack of a statistically significant finding doesn't tell you one way or another if there is an effect. I would caution against over-interpreting non-statistically significant findings. Lack of a statistically significant finding doesn't mean that no effect exists, it simply means the analysis in question does not tell the researchers one way or another if an effect exists.

⁶ Costa, R., Dunsford, M., Skagerberg, E., Holt, V., Carmichael, P., & Colizzi, M. (2015). Psychological support, puberty suppression, and psychosocial functioning in adolescents with gender dysphoria. *The Journal of Sexual Medicine*, 12(11), 2206-14.

assigned at birth later in life. There is no evidence to support this claim. Additionally, it is important to note that Tennessee's ban on gender-affirming medical care is a broad ban on all gender-affirming medical care, regardless of whether the patient experienced childhood-onset gender dysphoria or adolescent-onset gender dysphoria.

12. It is true that some past studies on the benefits of gender-affirming medical care were limited to patient populations who first knowingly experienced gender dysphoria in early childhood (e.g., deVries et al. 2014). However, these are not the only studies documenting improved mental health from treatment. Other studies have similarly shown improved mental health for adolescents with gender dysphoria treated with pubertal suppression and gender-affirming hormones in contexts where the studied population was not limited to those experiencing early childhood onset gender dysphoria. Correspondingly, the clinical guidelines do not recommend that those who first experience gender dysphoria in adolescence be ineligible for gender-affirming medical care. The WPATH Standards of Care 8, for instance, highlight that those with an absence of gender incongruence during the prepubertal childhood period may warrant "a more extended assessment process," but are still candidates for care. Likewise, a recent publication from our group found that it is not uncommon for transgender people to first come to understand their transgender identity in adolescence or later.⁷ In this sample of over 27,000 transgender adults, 40.8% reported first coming to realize their transgender identity during adolescence or adulthood. Though one's transgender identity has a strong biological basis, as described later in this declaration, it can take some time for individuals to ascribe language to their transgender identity or gender dysphoria, and it can also take a substantial period of time to overcome the stigma

⁷ Turban, J. L., Dolotina, B., Freitag, T. M., King, D., & Keuroghlian, A. S. (2023). Age of Realization and Disclosure of Gender Identity Among Transgender Adults. *Journal of Adolescent Health*, 72(6), 852-59.

associated with a transgender identity to be able to openly accept one's transgender identity. Thus, a lack of expressed early childhood gender incongruence does not necessarily indicate less severe gender dysphoria, or that gender-affirming medical care will not be effective.

13. Dr. Cantor raises "particular concern" that adolescent-onset gender dysphoria may actually represent borderline personality disorder (BPD). (Cantor Decl. ¶ 160). There is no evidence to support this theory. Existing guidelines emphasize the importance of a comprehensive biopsychosocial mental health evaluation, designed to differentiate other mental health conditions (e.g., BPD or body dysmorphic disorder from gender dysphoria), prior to initiating gender-affirming medical care. Of further note, a recent peer-reviewed paper in *The Harvard Review of Psychiatry* emphasized the ways in which certain potential indicators of other conditions, like BPD, can be differentiated from gender dysphoria.⁸ It also noted that it is rare for BPD to lead to a transgender identity through "identity diffusion."⁹

DR. CANTOR FALSELY CLAIMED THAT I MADE AN ERROR IN MY CHARACTERIZATION OF HOW DIAGNOSTIC CRITERIA CHANGED FROM DSM-IV TO DSM-5

14. In my initial declaration, I explained that the DSM-IV diagnosis of "gender identity disorder in children" did not require a child to identify as a gender different from their sex assigned at birth, an issue that was remedied with the DSM-5's "gender dysphoria" diagnosis. Dr. Cantor claimed that the DSM-5 diagnosis of gender dysphoria did not require one to identify with a gender different from their sex assigned at birth and the the DSM-IV diagnosis of "gender identity disorder in children" did. (Cantor Decl. ¶ 308). However, he failed to note, despite pasting the DSM-5 criteria into his declaration, that the DSM-5 gender dysphoria diagnosis states that the criterion A1

⁸ Goldhammer, H., Crall, C., & Keuroghlian, A. S. (2019). Distinguishing and addressing gender minority stress and borderline personality symptoms. *Harvard Review of Psychiatry*, 27(5), 317-25

⁹ *Id.*

is required for the diagnosis: “a strong desire to be of the other gender or an insistence that one is the other gender (or some alternative gender different from one’s assigned gender.” The prior DSM-IV diagnosis of “gender identity disorder in children” did not require this, and one could qualify for the diagnosis by meeting criterion A2-A5, none of which require a gender identity different from one’s sex assigned at birth, creating the potential for cisgender “tomboys” or cisgender males with “feminine interests” to meet those old diagnostic criteria.

**DEFENDANTS’ EXPERTS’ ASSERTION THAT SOCIAL TRANSITION
AND/OR GENDER-AFFIRMING MEDICAL CARE INTENSIFY GENDER
INCONGRUENCE IS NOT SUPPORTED BY EVIDENCE**

15. The Defendants’ experts spend a considerable portion of their declarations discussing social transition. This refers to when a transgender person adopts a gender expression (i.e., a name, pronouns, clothes, etc.) that aligns with their gender identity. This does not involve any of the medical interventions banned by the Tennessee law at issue in this case. Nevertheless, it is worth noting that the assertions made by the Defendants’ experts about this issue are not supported by evidence. For example, Dr. Levine states: “Social transition of young children is a powerful psychotherapeutic intervention that radically changes outcomes, almost eliminating desistence.” (Levine Decl. ¶ 122). This assertion is premised on the presumption that a social transition will make a child identify more strongly as transgender and therefore be less likely to ultimately “desist” and maintain a cisgender identity. However, research has shown that gender identification is not significantly different before and after a social transition.¹⁰ Rae et al. *Psychological Science* 2019 makes clear that this association—between prepubertal social transition and transgender identity—is because those who undergo a pre-pubertal social transition had stronger discordance between their sex assigned at birth and their gender identity to begin

¹⁰ Rae, J. R., Gülgöz, S., Durwood, L., DeMeules, M., Lowe, R., Lindquist, G., & Olson, K. R. (2019). Predicting early-childhood gender transitions. *Psychological Science*, 30(5), 669-81.

with, and that social transition itself does not increase gender discordance. Defendants' experts proceed to point to studies showing that over 98% of transgender adolescents who start pubertal suppression go on to start gender-affirming hormones, in order to suggest that pubertal suppression increased these adolescents' gender incongruence. It is a logical fallacy to infer that a study showing that 98% of adolescents on puberty blockers proceeding on to gender-affirming hormones is evidence that puberty blockers increase the likelihood of persistence; rather, it is just as possible, and in my opinion more likely, that, given the biopsychosocial mental health assessment that is done prior to starting gender-affirming medical interventions under current guidelines, the adolescents who started pubertal suppression were those who were, through medical and mental health screening, determined, prior to starting pubertal suppression, to have a low likelihood of future desistence.

DEFENDANTS' EXPERTS' SUGGESTION THAT GENDER-AFFIRMING TREATMENT SHOULD NOT BE AVAILABLE BECAUSE GENDER DYSPHORIA IS THE RESULT OF "SOCIAL CONTAGION" AND "RAPID ONSET GENDER DYSPHORIA" IS WITHOUT BASIS

16. Defendants' experts suggest that gender-affirming medical care should be banned because, they claim, peer influence is responsible for adolescents seeking gender-affirming medical care that they will later come to regret. They assert that "social contagion" is the driver of gender dysphoria and that there is a phenomenon of "rapid-onset gender dysphoria" or ROGD. For instance, Dr. Roman states, "My view is that gender dysphoria in children and young adults is largely explained as a social contagion." (Roman Decl. ¶ 28). Such a view is not supported by evidence.

17. Several of Defendants's experts allude to the term "rapid onset gender dysphoria" – failing to note that this is not a recognized mental health condition.¹¹ The term "rapid onset gender dysphoria" entered the literature in 2018 through a publication by Dr. Lisa Littman.¹² Soon after the initial publication of Dr. Littman's article, a correction was published.¹³ The correction noted, "Rapid onset gender dysphoria (ROGD) is not a formal mental health diagnosis at this time . . . This report did not collect any data from the adolescents and young adults (AYAs) or clinicians and therefore does not validate the phenomenon."¹⁴ The correction goes on to say "the term should not be used in any way to imply that it explains the experiences of all gender dysphoric youth . . ." Despite this, Defendants' experts repeatedly cite this article to make unsubstantiated claims. For example, Dr. Laidlaw states, "there is evidence that this increase [in referrals to gender clinics] may be in part due to social contagion and fueled by social media / internet use (Littman, 2018)." (Laidlaw Decl. ¶ 213). Dr. Levine states, "there is evidence among adolescents that peer social influences through "friend groups" (Littman 2018) or through the internet can increase the incidence of gender dysphoria or claims of transgender identity." (Levine Decl. ¶ 33).

18. The Littman study was an anonymous online survey of the parents of transgender youth, recruited from websites where this notion of "social contagion" leading to transgender

¹¹ Littman, L. (2019). Correction: Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria. *PLoS One*, 14(3), e0214157.

¹² Littman, L. (2018). Rapid-onset gender dysphoria in adolescents and young adults: A study of parental reports. *PLoS One*, 13(8).

¹³ Littman, L. (2019). Correction: Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria. *PLoS One*, 14(3), e0214157.

¹⁴ A recent study by Bauer et al. in *The Journal of Pediatrics* examined some of the associations that would be consistent with the existence of "rapid-onset gender dysphoria" and concluded that their results "did not support the rapid onset gender dysphoria hypothesis." Bauer, G. R., Lawson, M. L., Metzger, D. L., & Trans Youth CAN! Research Team. Do Clinical Data from Transgender Adolescents Support the Phenomenon of" Rapid Onset Gender Dysphoria"? *The Journal of Pediatrics*, S0022-3476

identity is popular. The anonymous survey participants were asked what they thought was the etiology of their children's transgender identity. Some of these parents believed that their children became transgender as a result of watching transgender-related content on websites like YouTube and having LGBTQ friends. The alternative interpretation, and in my opinion more likely interpretation, is that these youth sought out transgender-related media and LGBTQ friends because they wanted to find other people who understood their experiences and could offer support. The parent respondents also noted that, from their perspective, their children became transgender "all of a sudden," hence the term "rapid onset." Once again, the problem here is that the study did not interview the adolescents themselves, nor their healthcare providers. It is common for transgender (as with gay, lesbian, and bisexual) children and adolescents to conceal their identity from their parents for long periods of time. In a recent study from our research group, transgender people who first understood their gender identity in childhood waited a median 14 years before sharing this with another person.¹⁵ In my experience working with transgender youth and adults, the reasons for this tend to be out of fear of negative repercussions (rejection, being kicked out of the house, or even physical assault) were their parents to find out that they are transgender. Children often learn to conceal their gender non-conforming behaviors and transgender identity early, particularly if their parents have strong negative reactions to them exhibiting gender non-confirming behavior.

19. Dr. Cantor attempts to add credence to this 2018 Littman study by stating that it was "independently replicated by another study." (Cantor Decl. ¶ 136). The "replicated" study (the

¹⁵ Turban, J. L., Dolotina, B., Freitag, T. M., King, D., & Keuroghlian, A. S. (2023). Age of Realization and Disclosure of Gender Identity Among Transgender Adults. *Journal of Adolescent Health*, 72(6), 852-59.

“Diaz Study”)¹⁶ referenced by Dr. Cantor used the same methodology as the original Littman study of recruiting participants from websites where the idea of “social contagion” is popular, and thus carries the same limitations. Specifically, the Diaz Study used an identical methodology to the one used by Dr. Littman in her paper, and recruited participants from a website called “ParentsofROGDKids.com.” Once again, the only thing that this study shows is that a number of people online have the belief that the politicized notion of ROGD is true. Due to this biased methodology, the Diaz Study referenced by Dr. Cantor likewise does not establish that ROGD is a valid mental health diagnosis. Furthermore, after publication, the Diaz Study was updated with a notification from the journal stating, “readers are alerted that concerns have been raised regarding methodology as described in this article. The publisher is currently investigating this matter and a further response will follow the conclusion of this investigation.”¹⁷ The author of the paper subsequently announced that the paper was retracted, stating: “I have just been notified that my paper with Susanna Diaz will be retracted by the publisher due to concerns about the lack of informed consent.”¹⁸ Also of note, the original paper contains a notation that the first author “Susanna Diaz” is a pseudonym – an unusual practice in peer-reviewed journals.

20. Defendants’ experts assert that the increase in referrals to gender clinics over the past few decades supports a “social contagion” theory. It does not. The increase in referrals has coincided with increased visibility of transgender people in society and greater awareness of gender dysphoria and access to medical care to treat it. Whereas parents in the past may have had

¹⁶ Diaz, S., & Bailey, J. M. (2023). Rapid Onset Gender Dysphoria: Parent Reports on 1655 Possible Cases. *Archives of Sexual Behavior*, 52(3), 1031-43.

¹⁷ *Id.*

¹⁸ Blanchard, R. Statement on Twitter May 23, 2023. Available at: <https://twitter.com/profjmb/status/1661022522446610434?s=20>. Accessed: May 28, 2023.

limited literacy regarding gender diversity in adolescents, today more Americans, as well as people abroad, have greater understanding of the experiences of transgender youth. This fact has undoubtedly increased the number of parents bringing their adolescents to gender clinics for evaluation. Additionally, insurance coverage of gender-affirming medical interventions has improved drastically, meaning that more families are able to afford care, which results in an increase in referrals for evaluation. Of note, not all adolescents who present for treatment ultimately go on to receive gender-affirming medical interventions.¹⁹ In fact, in a large study from a Netherlands gender clinic, the percentage of patients who presented for evaluation who actually started any kind of gender-affirming treatment has decreased over time.²⁰ As the authors of that study note, “this finding may be explained by the fact that in the past it was harder to find information about [gender dysphoria] and its treatment, and only people with extreme types of [gender dysphoria] managed to visit our gender identity clinic for treatment. Currently, owing to media attention and the internet, it is easier to access information about our gender identity clinic, making the threshold lower to search for help.” This shows that while more people may be coming in for evaluation, the criteria for diagnosis and treatment remain stringent and a smaller percentage of patients are actually being diagnosed with gender dysphoria and referred on for medical treatment.

21. Defendants’ experts point to changes in sex ratios of patients at some clinics (where “birth-assigned females” are appearing in greater numbers relative to “birth-assigned males” than in the past), and claim that this assertion supports their “social contagion” theory. However, there

¹⁹ Wiepjes, C. M., Nota, N. M., de Blok, C. J., Klaver, M., de Vries, A. L., Wensing-Kruger, S. A., ... & den Heijer, M. (2018). The Amsterdam cohort of gender dysphoria study (1972–2015): trends in prevalence, treatment, and regrets. *The Journal of Sexual Medicine*, 15(4), 582-590.

²⁰ *Id.*

are many potential explanations for a change in sex ratio that do not involve social contagion. One likely possibility is that more birth-assigned females are being referred to gender clinics by their pediatricians due to greater understanding among pediatricians that birth-assigned females can have gender dysphoria. In the past, physicians thought of gender dysphoria as something that primarily impacted birth-assigned males. This likely led to many cases of gender dysphoria among birth-assigned females being undiagnosed or “missed.” In recent years, literacy regarding gender dysphoria among birth-assigned females has increased among physicians. As fewer birth-assigned females go undiagnosed, the sex ratio in gender clinics has shifted away from predominantly birth-assigned males. This is similar to a pattern that has been seen in autism spectrum disorder. For example, a large study found that with increasing awareness that autism spectrum disorder can impact birth-assigned females as well as birth-assigned males, the sex ratio shifted more toward birth-assigned females, from 5.1:1 (birth-assigned males to females) to 3.1:1.²¹ The same study saw the sex ratio for the related diagnosis of Asperger’s syndrome similarly shift from 8.4:1 to 3.0:1.

22. Furthermore, if the Defendants’ experts’ theory that sex ratios have shifted due to social contagion and that there exists a unique susceptibility among people assigned female at birth were true, one would expect not just a shift in the sex ratios among those referred to gender clinics, but a shift in the sex ratio of adolescents identifying as transgender among the general population. A recent study from our research group,²² utilizing data from the Center for Disease Control and Prevention’s Youth Risk Behavior Survey, and including 91,937 adolescents in 2017 and 105,433

²¹ Jensen, C. M., Steinhausen, H. C., & Lauritsen, M. B. (2014). Time trends over 16 years in incidence-rates of autism spectrum disorders across the lifespan based on nationwide Danish register data. *Journal of Autism and Developmental Disorders*, 44(8), 1808-18.

²² Turban, J. L., Dolotina, B., King, D., & Keuroghlian, A. S. (2022). Sex assigned at birth ratio among transgender and gender diverse adolescents in the United States. *Pediatrics*, 150(3).

adolescents in 2019, found that in both years the sex ratio was close to 1:1, slightly favoring those assigned male at birth.²³ This study also examined the hypothesis that adolescents may be coming to identify as transgender in an attempt to flee the stigma of being cisgender and gay. The results did not support that hypothesis.

23. Some have raised the question that if decreased stigma were driving the higher rates of adolescents openly identifying as transgender, we should be witnessing a parallel in documentable rise in gender dysphoria among, say, middle-aged adults. However, transgender middle-aged adults have endured decades of stigma for their transgender identities that, despite improvements in contemporary social attitudes, make them far less likely to come out as transgender. The “gender minority stress” model explains that these decades of exposure to unaccepting environments leads to expectations of future rejection and internalized transphobia (i.e., internalization of society’s negative messages about transgender people leading to hate of oneself for being transgender), as well as identity concealment.²⁴ These factors make it less likely for middle-aged transgender adults to come out, despite the recently observed increase in societal acceptance for transgender people in the United States. Transgender youth are, for the first time, growing up in environments where transgender identity is not as stigmatized, making it easier for them to come out when compared to transgender adults plagued by anxiety due to decades of living in societies where being transgender was not recognized or accepted.

²³ As with many papers in this field, this study garnered a great deal of attention, including a letter to the editor questioning the methodology. We responded to these concerns with additional analyses that reaffirmed the study’s conclusions, and this paper was not retracted: Turban, J. L., Dolotina, B., King, D., & Keuroghlian, A. S. (2022). Author Response to: Science and Public Health as a Tool for Social Justice Requires Methodological Rigor. *Pediatrics*, 150(6), e2022059680.

²⁴ Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the Minority Stress Model. *Professional Psychology: Research and Practice*, 43(5), 460.

DR. LEVINE'S STATEMENT THAT TRANSGENDER IDENTITY IS NOT BIOLOGICALLY BASED IS NOT ACCURATE

24. Dr. Levine's assertion that transgender identities are not biologically based is not accurate. There is a substantial body of peer-reviewed scientific evidence showing that transgender identity has a strong biological basis. One of the strongest lines of evidence comes from so-called "twin studies" that allow researchers to look at the differential impact of environment (presumed to be similar for twins) and innate genetic factors (similar for identical twins but different for fraternal twins). Researchers have examined identical twins (with the same DNA) and fraternal twins (with different DNA) and found that identical twins of transgender people are far more likely to be transgender than fraternal twins of transgender people, pointing to a strong genetic link.²⁵ Functional neuroimaging studies have shown that transgender adolescents have patterns of brain activation most similar to non-transgender adolescents with their same gender identity rather than those of their sex assigned at birth.²⁶ Sophisticated gene sequencing studies have suggested that genes involved in estrogen processing play a role in the development of gender identity among transgender people.²⁷ Though the precise etiology of gender identity has yet to be identified, these studies together all establish that there is a strong innate biological basis for transgender identities.

DEFENDANTS' EXPERTS' CLAIMS THAT "SELF-REPORT" AND "SURVEY" DATA ARE NOT VALID REPRESENTS A MISUNDERSTANDING OF PSYCHIATRIC RESEARCH

²⁵ See, for example, Coolidge, F. L., Thede, L. L., & Young, S. E. (2002). The heritability of gender identity disorder in a child and adolescent twin sample. *Behavior Genetics*, 32(4), 251-57.

²⁶ Burke, S. M., Cohen-Kettenis, P. T., Veltman, D. J., Klink, D. T., & Bakker, J. (2014). Hypothalamic response to the chemo-signal androstadienone in gender dysphoric children and adolescents. *Frontiers in Endocrinology*, 5, 60.

²⁷ Theisen, J. G., Sundaram, V., Filchak, M. S., Chorich, L. P., Sullivan, M. E., Knight, J., ... & Layman, L. C. (2019). The use of whole exome sequencing in a cohort of transgender individuals to identify rare genetic variants. *Scientific Reports*, 9(1), 1-11.

25. Clinical psychiatry relies heavily on self-report and data collected via questionnaires. Defendants' experts' claims that self-report and "survey" data are not valid represent a broad misunderstanding of psychiatry. Clinical psychiatry and clinical psychiatric research almost always involve patient reports of their symptoms. Because psychiatric conditions (e.g., generalized anxiety disorder, major depressive disorder, schizophrenia, obsessive compulsive disorder, and gender dysphoria, among many others) do not have laboratory tests, diagnosis is made largely based on patient reports of their symptoms. At times these may be supplemented by reports from parent and clinician observations, particularly for establishing a diagnosis; however, they are not considered standard or necessary in clinical trials that track symptoms over time or compare the mental health of those receiving treatment to those not receiving treatment. The studies cited throughout my initial declaration utilize commonly used and validated self-report psychometric measures including the Kessler-6 measure of past-month severe psychological distress,²⁸ Beck Depression Inventory II,²⁹ and self-report measures from the National Institutes of Health Toolbox Emotion Battery.³⁰ These self-report instruments are standard in psychiatric research.

DEFENDANTS' EXPERTS' VIEWS DO NOT ALIGN WITH MAINSTREAM PSYCHIATRY OR PSYCHOLOGY

26. As noted in my initial declaration, bans on gender-affirming medical care for adolescent gender dysphoria are opposed by all relevant major medical organizations including

²⁸ Kessler, R. C., Green, J. G., Gruber, M. J., Sampson, N. A., Bromet, E., Cuitan, M., ... & Zaslavsky, A. M. (2010). Screening for serious mental illness in the general population with the K6 screening scale: results from the WHO World Mental Health (WMH) survey initiative. *International Journal of Methods in Psychiatric Research*, 19(S1), 4-22.

²⁹ Beck, A. T., Steer, R. A., & Brown, G. (1996). Beck depression inventory-II. *Psychological Assessment*.

³⁰ Slotkin, J., Nowinski, C., Hays, R., Beaumont, J., Griffith, J., Magasi, S., & Gershon, R. (2012). NIH Toolbox scoring and interpretation guide. Washington (DC): National Institutes of Health, 6-7.

the American Medical Association, the American Academy of Pediatrics, the American Psychiatric Association, the American Academy of Child & Adolescent Psychiatry, the Endocrine Society, and the Pediatric Endocrine Society, among others.³¹ Defendants' experts, which include experts in unrelated fields (e.g., Dr. Cantor is a pedophilia researcher, having never published original data in the field of child or adolescent gender dysphoria research, and has stated under oath that he has not treated any child or adolescent for gender dysphoria),³² present views that do not align with mainstream psychiatry or medicine, as it pertains to the treatment of adolescents with gender dysphoria. Their reliance on non-peer-reviewed reports from various countries in Europe (e.g., Sweden, Finland, the United Kingdom, etc.), none of which have banned gender-affirming medical care for adolescents with gender dysphoria, represent an attempt to circumvent the actual peer-reviewed literature and expert consensus in the field.

CONCLUSION

27. In summary, the reports from the Defendants' experts do not provide justification for banning gender-affirming medical care for adolescents with gender dysphoria. Their view, that gender-affirming medical care for adolescents with gender dysphoria should be legislatively banned, is a fringe view, not consistent with mainstream medicine or science.³³ None of the European countries they cite have banned care. All major medical organizations in the United States disagree with the views expressed by Defendants' experts about the banned treatment.³⁴

³¹ For a list of statements, please see Turban, J. L., Kraschel, K. L., & Cohen, I. G. (2021). Legislation to criminalize gender-affirming medical care for transgender youth. *JAMA*, 325(22), 2251-52.

³² *Eknes-Tucker v. Marshall*, 603 F. Supp. 3d 1131 (M.D. Ala. 2022)

³³ For a list of statements from major medical organizations opposing legislative bans on gender-affirming medical care for adolescent gender dysphoria, please see Turban, J. L., Kraschel, K. L., & Cohen, I. G. (2021). Legislation to criminalize gender-affirming medical care for transgender youth. *JAMA*, 325(22), 51-2252.

³⁴ *Id.*

28. Under current guidelines, medical interventions for adolescents with gender dysphoria are only provided following a comprehensive biopsychosocial evaluation, consent is provided by legal guardians, assent is provided by the patient, and all stakeholders (patient, guardians, mental health professional, prescriber) are in agreement that the benefits outweigh the risks for a given adolescent.

29. As I have outlined above and in my initial declaration, there is a substantial body of literature showing that gender-affirming medical care results in better mental health outcomes for adolescents with gender dysphoria. This research is consistent with the decades of clinical experience from around the world of improved mental health outcomes from these interventions. Furthermore, there are no evidence-based alternatives for treating gender dysphoria. While Defendants' experts critique the literature regarding the benefits of gender-affirming medical care, the studies they present on rapid-onset gender dysphoria and social contagion meet none of their proposed bars for what research they would consider valid. Though they repeatedly advocate for "psychotherapy" alternatives to gender-affirming medical care, they fail to cite a single study showing that such strategies are effective. The Tennessee ban would leave physicians, adolescents, and their parents without any evidence-based treatments for adolescent gender dysphoria, a condition that can cause immense suffering.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Jack L. Turban

Executed on: May 31, 2023

JACK L. TURBAN, MD, MHS

CERTIFICATE OF SERVICE

I hereby certify that on June 1, 2023, the undersigned filed the foregoing document via this Court's electronic filing system, which sent notice of such filing to the following counsel of record:

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